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June 10, 1964

Dr. Robert J. Myers  
Rohm & Haas Company  
Washington Square  
Philadelphia 3, Pennsylvania

Dear Dr. Myers:

Your letter of June 3 arrived here while I was away on a business trip to Canada. This is the first opportunity I have had to give it my attention.

For the benefit of all the members of your organization who will get copies of this letter, I would like to state that neither the dioxime diphenyl arsanic acid (DDAA) or the wash solution (WS) are being produced deliberately by us as prime products. They are being produced in substantial quantities as by-products of our ARSENIC ACID manufacturing operations on a daily basis. We have accumulated several hundred thousand pounds of the crude DDAA as it comes from our process because we are hopeful that some day we may find a volume market for this. The wash solution is being reacted with lime to form the insoluble calcium salts so as to tie up the arsenic as a safety precaution. While the DDAA is not produced as a prime product, if there was a large market we believe that this could be produced in large volume by simply altering the temperature conditions under which the reactions are carried out for production of ARSENIC ACID. I think it is important to note that if a use for these two by-products could be developed it would significantly reduce the cost of production of ARSENIC ACID of which we anticipate producing in excess of one million pounds per year in 1964.

A few words regarding the investigations we have carried out on DDAA outside of the herbicide field. We have actually investigated this extensively for feeding to poultry and to a lesser degree for feeding to pigs. It does have a consistent growth stimulating effect on poultry and pigs. The growth stimulating effect is greater with DDAA than it is with ARSENIC ACID and the compound is significantly less toxic, even though ARSENIC ACID has been considered the least toxic of the organic arsanicals for food use heretofore. We have filed patent applications in the United States and a number of foreign countries for the use of DDAA in poultry and animal feeds. Actually, we are offering the product commercially in Australia and Mexico to the feed industry. We have not offered DDAA in the United States because of the tremendous amount of data that has to be accumulated before we could

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get it cleared by the FDA. Currently, we have a research project in progress at the Ontario Agricultural College, under Dr. Slinger, based on a research grant given to them. We hope that this project may clear it for sale in Canada in the not too distant future and that this data additionally will augment the data that we hope to have for applying for clearance with the FDA here.

Two samples of DMA are going to Dr. McRae under separate cover. One sample is the crude material after drying which contains in the range of 86 percent to 90 percent diamine diphenyl arsenic acid, approximately 10 percent Arsanilic Acid, approximately one percent of unidentified gummy substance and a small percentage of moisture. The second sample is the purified material in which virtually all of the gummy substance has been removed, as well as, all but about two percent of the Arsanilic Acid.

In the same mailing with the sample of DMA will be a sample of WS. A typical average analysis of the WS is as follows:

pH	4.0
Specific Gravity	1.232
Wgt. of gal. of solution	10.264
As <sub>2</sub> O <sub>3</sub>	14.63%
As <sub>2</sub> O <sub>3</sub>	13.91%
Chloride ion	6.12%
NaCl	10.1%
Na <sub>2</sub> SO <sub>4</sub>	18.6%
Na <sub>2</sub> SO <sub>4</sub>	18.3%
Na <sub>2</sub> HAsO <sub>4</sub>	22.6%
Arsonic expressed as metallic	20.07%

In Dr. Beavers' memo regarding the acceptability of arsenical herbicides I note the concern expressed on this point. I share this concern personally, however, the organic arsenicals are year by year being accepted again more readily for food use. It appears as though they are far less hazardous than inorganic arsenic compounds from the standpoint of toxicity and I believe are gaining favor as being accepted as non-carcinogenic substances. While one can not ignore public sentiment regarding organic arsenicals, I am somewhat optimistic about the continuing improvement in acceptability of this class of compounds. Certainly, they are not nearly as toxic as the soluble inorganic compounds used in the past. Incidentally, I am not sure whether these should be considered as being applied as insoluble compounds or not but, as you undoubtedly know, the soluble sodium salt can easily be prepared from

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the DCAA or the Arsanilic Acid.

If we can be of any further assistance in any manner at all in determining the value of these materials as herbicides, or for any other application, we certainly will be very interested in having you communicate with us.

Very truly yours,

WHITEHORN LABORATORIES, INC.,

C. W. Whitmeyer  
President

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